ARITHMETIC AS A MEANS OF TEACHING WAR SAVINGS AND THRIFT

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It is possible to couple instruction in thrift with the regular work in arithmetic from the primary grades up through the whole elementary school. For this purpose teachers can readily devise a number of interesting examples which can be assigned to the different grades. The following outlines of lessons are presented to exhibit the method employed in the Iowa State Teachers College in teaching thrift and encouraging pupils to purchase War Savings Stamps. The lessons for the primary grades were worked out by Miss Laura Remer. The lessons for the fifth and seventh grades were worked out by Miss Olive Tilton. The lessons for the sixth grade were worked out by Miss Hazel Webster-Byrnes. All of the authors are critic teachers in the Iowa State Teachers College.

GRADE II

The need and method of buying Thrift Stamps was taken up in conversation lessons.

The following formal work was covered in the series of arithmetic lessons:

1. Daily practice in reading and writing dollars and cents.
2. Recognition of relation of one piece of money to another.
3. Practice in making change.
4. Addition and subtraction combinations.
5. Easy multiplication and division combinations.

Typical problems:

Inez has brought $1.00 to school. How many Thrift Stamps can she buy?

Alice has brought 25 cents. How many can she buy?

Arithmetic work growing out of the above:

How many Thrift Stamps can we buy for 50 cents? 75 cents? $1.00? How many Thrift Stamps did we buy today? What did they cost?

Children determined method of keeping record of Thrift Stamps purchased by class. (Kept on board: A and B divisions separate. Record to show number of Thrift Stamps purchased and their cost.)

<center>LESSON II</center>

Reading and writing of dollars and cents in order to keep record of Thrift Stamps purchased.

Additional problems:

Elda and Virginia have each brought 25 cents. How many Thrift Stamps can they buy?

What is our total? Compare with the total of Division II.

<center>LESSONS III, IV, V</center>

Same type of work continued, fixing money relations and ability to keep accurate record.

Problems:

How many Thrift Stamps can Helen buy with 50 cents?

Will has brought 25 cents, Virginia, $1.00, and Bernice 50 cents. How many Thrift Stamps can they each buy? How many Thrift Stamps did our class buy today? What is our record? Etc.

This type of work is not confined to the arithmetic period. Children, often, without aid of teacher, figure up during recess, opening exercises, and rest periods what their record is, and compare it with that of the other division.

LESSONS VI, X

Game.—Buying "Toy" Stamps. Use toy money. Game involves (1) no changing of money; (2) changing of money.

Each child is given a certain amount of money. One child acts as clerk, the others buy.

Typical exercises:

"Please give me 2 Thrift Stamps." Gives clerk 50 cents.

"Please give me 2 Thrift Stamps and 5 cents in change." Gives clerk 1 quarter and 3 dimes. Receives change.

Children keep record of Thrift Stamps bought and their cost.

By giving each child certain denominations of money, the drill can be made to meet the individual needs of the children.

NOTE.—About the second week after starting the Thrift campaign, the children were asked to estimate the amount of money they expected to invest this year in Thrift Stamps. This furnished a motive for the following lesson:

Edmund earns 5 cents a week for doing errands at home. He also saves 5 cents a week by walking to Sunday school. How much does he save a week? Month? About how many Thrift Stamps can he buy a month? How many in 12 months?

He also expects to draw $25.00 from his bank account. How many (War Stamps, Baby Bonds) can he buy with $25.00? About how many can he pledge?

Lent saves 5 cents a week by staying home from the picture show. In how many weeks can he buy 1 Thrift Stamp? 2 Thrift Stamps? Etc. He also earns an average of 5 cents a week by carrying students' suitcases. How many Thrift Stamps can he pledge?

Willie receives 1 cent for each cow he milks. He usually milks 3 a day. How much money does he earn a day? a week? in 9 days? In how many days can he earn 1 Thrift Stamp? About how many Thrift Stamps can he pledge?

One child earns or saves 2 cents a day, another 4 cents a week, another 6 cents, etc. Thus the 10's, 5's, 2's, 3's, 4's and 6's are studied. A smaller number of the children earned regularly 4 cents and 6 cents, so it was found necessary to do additional drill work with these tables at a later time.

The following formal work was covered in this series of lessons:

1. Daily practice in reading and writing dollars and cents.
2. Organization and use of the table of United States money.
3. Practice in changing money.
4. Addition and subtraction combinations.
5. Multiplication and division combinations.
6. Column addition.
7. Addition and subtraction of numbers of two orders.

LESSON I

Actual buying of Thrift Stamps.

Typical problems:

Helen has brought 75 cents; Vesta and Ruth have each brought 25 cents. How many Thrift Stamps can each one buy?

Richard has brought $4.12 with which to buy a Baby Bond. How much interest money will he receive in 1923?

How many Thrift Stamps have we bought today? Amount invested?

Children determine method of keeping record of Thrift Stamps purchased by class.

LESSON II

Drill in reading and writing of dollars and cents in order to keep record of Thrift Stamps purchased.

Additional Problems.

Find out how many Thrift Stamps can be bought by children who brought money. What is our total? Compare record with Division II.

LESSONS III–VIII

Each day children find out how many Thrift Stamps can be bought. Add to record.

Bobby has brought all the money from his savings bank, $1.75. How many Thrift Stamps can he buy? Etc.

Game.—This is played much the same as in Grade II. The difficulty of problems is increased by buying and selling more Toy Stamps, and by making change. Each child decides before going to clerk how many Toy Stamps he expects to buy, and finds out how much change he should receive. Divide class into two divisions. Keep record on board of Toy Stamps purchased and amount invested by each division. Compare records.

LESSON IX

Once a week the children added record of Thrift Stamps, compared it with that of Division II and with that of the other primary grades.

Typical problems:

Last week we had invested $86.35. Our total now is $94.26. How much did we invest this week?

We have invested $94.26, Grade II, $78.73. How much more have we invested than Grade II?

Find the total amount invested by the primary grades, etc.

The multiplication and division combinations were worked out much the same as in Grade II.

Typical problem:

Helen earns 7 cents a week for doing the dishes. How many Thrift Stamps can she buy a month? How much money can she pledge for the year?

All the tables received considerable drill through this type of work.

GRADE IV

Thrift work furnished much drill in (1) the four fundamental processes, (2) the interpretation of problems.

A record, kept on the blackboard, showed the amount of money each grade, from the kindergarten through the high school, had invested in Thrift Stamps. This was added to

daily, and totaled once a week. Much addition and sub-traction were necessary in finding out how much the fourth grade, the primary grades, the intermediate grades, and the high school had gained during the week; how much more the fifth grade had invested than the fourth grade, the fourth grade more than the third grade, etc.

When the school children were asked to estimate the amount of money they expected to invest in Thrift Stamps this year, each fourth-grade child made his own estimate. The following are some of their problems:

During the spring, fall, and winter months, Helen expects to earn 15 cents a week. During the summer months she expects to earn 25 cents a week. She has now in her Savings Bank enough money to buy a Baby Bond. How much can she pledge for the year?

Lillian expects to earn an average of 10 cents a week throughout the year. She has already drawn from her bank account $25.00 and invested it in Baby Bonds. How much can she pledge? Number of Thrift Stamps?

Last year Clarence raised six puppies and sold them for $2.50 apiece. He plans to do the same this year. During the summer months he expects to earn at least $10.00 a month by doing farm work, and during the school months he earns about 50 cents a month doing odd jobs. How much can he pledge?

Ways and means of earning and saving money were dis-cussed in school and out. All such suggestions were kept as practical as possible. Following are a few of the problems suggested and solved by the children:

If every child in the primary grades saved regularly 5 cents a week, how many Thrift Stamps could we buy in one month? in one year?

If every child in the Training School saved 5 cents a week, how many Baby Bonds could we purchase in a month? in a year?

How many Baby Bonds could we buy if each citizen in Cedar Falls invested 5 cents a week? if we invested 25 cents a week?

About how many Baby Bonds must each Cedar Falls citizen purchase if we take our full quota?

GRADE V

I.   PROBLEMS FOR ORAL WORK

The material for the following problems used in the fifth grade was obtained from a report of the amount of money each room of the school had invested in War Savings Stamps during one month.   Accompanying this report were the names of the children who had bought these stamps.   In this fifth grade the main topic is common fractions.   Oral problems were made from the following record:

WAR SAVINGS GRADE V

JANUARY

	Thrift	W. S. S.
Dagmar...............	$0.25	
Rodney...............	2.50	
Carol.................	2.25	
Lois..................	1.25	
Gay..................	0.25	
Dorothy..............	1.25	
Gladys...............	....	$20.00
Virginia..............	0.50	....
Paul.................	0.50	....
Dale.................	3.50	15.00
Margaret.............	0.50	....
William..............	1.00	10.00
Margery.............	0.25	....
Leland...............	3.00	5.00
Total.............	$17.00	$50.00

II.   PROBLEMS FOR WRITTEN WORK

Written problems were based upon the following data which were obtained from a bulletin issued by the Treasury Department, National War Savings Committee, *W. S. 113*.

COST OF WAR SAVINGS STAMPS

January, 1918...$4.12		July............$4.18	
February........4.13		August..........4.19	
March...........4.14		September.......4.20	
April...........4.15		October..........4.21	
May............4.16		November........4.22	
June............4.17		December........4.23	

Thrift Stamps cost $0.25.
Thrift Card holds 16 Thrift Stamps.
War Savings Stamps, January 1, 1923, will be worth $5.00.

1. Find cost of 5 War Savings Stamps purchased as follows: One, January, 1918; two, March, 1918; one, May, 1918; and one, June, 1918.

2. Three girls each buy a War Savings Stamp in January, March, June, and August. Find total cost of stamps.

3. How much more does a War Savings Stamp cost in September than in January? Why?

4. How much more is a War Savings Stamp worth in January, 1923, than it is today?

5. How much does a person gain who buys 75 stamps today and holds them until January, 1923.

6. What would be the total savings in Iowa if each person purchased a stamp today (2,250,000 people in Iowa)?

7. There are 2,250,000 people in Iowa and 100,000,000 people in the United States, what part of the $2,000,000,000 of War Savings Certificates should Iowa buy? How many dollars worth should she buy?

8. How much money should each person in Iowa invest in War Savings Stamps? How many stamps would this be if they were purchased today?

9. Graphs (made from following data):

a) Quota of War Savings Certificates: U. S., $2,000,000,000; Iowa, $48,000,000.

United States ████████████████████████

Iowa ▪

Each unit equal to $100,000,000

Graph showing the total amount to be secured through War Savings Certificates
and the quota assigned to Iowa.

b) Savings of Training School children during January, 1918.

Grade	War Savings	Thrift
II......................	$110.00	$0.67
III...................	141.25	.94
IV...................	95.00	.95
V.....................	73.00	.85
VI...................	223.50	.91
VII.................	60.50	.61
C.....................	236.50	.31
B.....................	31.25	.26
B² and A²............	85.00	.25
A.....................	28.75	.29
Seniors...............	110.00	.42
Total.............	$1,194.75	

Following graph made from data given in (*b*).

Grade

Each unit equals $10.00
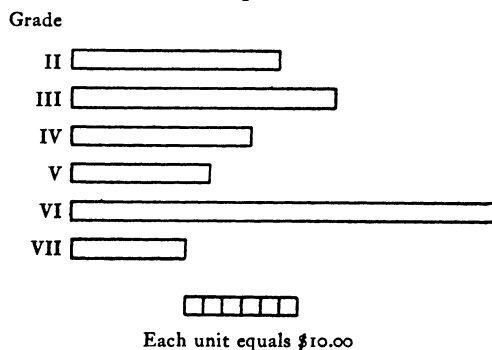
DIAGRAM I

GRADE VI

Ninety-five per cent. of the children in the sixth grade have bought Thrift or War Savings Stamps. Problems were made concerning each child's purchase, and the pupils were delighted with these real problems. This attitude was reflected in the fact that when problems are related to the actual experiences of the children there is far less trouble with the reasoning than there is with other even less difficult problems.

One of the best problems was formulated from the activity of Otto, who delivers papers and invests his earnings in Thrift Stamps each week. This afforded the first problem in the following list. All the children, except Otto found it necessary to have some review work in dividing a decimal by a decimal and multiplying a fraction by an integer, but they worked with a purpose, for they wanted to find out how many stamps Otto could buy each week. Meanwhile Otto kept his secret and made up "hard" problems about his own savings.

In any case, where it was found necessary, simpler problems of a similar nature were given for teaching and drill until the difficulties were mastered. Then the original problem was again tackled.

1. Otto earns 21⅔ cents a day for six days of the week. How many Thrift Stamps can he buy every week? He has now (February 16) worked five weeks. How many War Savings Stamps has he earned? How much change has he left?

2. From the table of room investments for January find out how much our class has invested. (See record below.) Find out which class is ahead and how much. How many War Savings Stamps has the A 1 division? the A 2 division? the B division? the entire room?

3. If this room (24 pupils) were 100 per cent in War Savings Stamps today, February 2, how much money would we have invested?

4. From January 31 to March 1, how much of an increase has been made in the purchase of War Saving and Thrift Stamps? (See record below.)

5. Agnes sold 3 drakes for $1.02 each. She wishes to invest the money in Thrift Stamps. How many can she buy?

6. Edward has $20.61 invested in War Saving Stamps and Thrift Stamps. He bought 2 War Saving Stamps in January and the rest in February. How many has he? How much will the government give him in 1923?

7. Einer is earning his money shoveling walks. He gets 20 cents an hour. He worked 1 hr. 30 min. Thursday evening; 1 hr. 45 min. Friday evening; 2 hr. 30 min. Saturday morning, and 3 hr. 35 min. Saturday afternoon. How much did he earn? How many stamps can he buy? How much change will he have left? How much more must he earn before he can fill a Thrift Card?

8. If Bert buys a War Savings Stamp each month this year, how much money will he invest? Find what his returns will be January 1, 1923.

9. No one is allowed to buy more War Saving Stamps than will yield him a return of $1,000 in 1923. How much would this amount cost next month? What would the profit be?

10. Villinova tells us that she has spent two-thirds of her money for Thrift Stamps and has 75 cents left. What did she have at first?

11. If Halver and Bert work nights after school to earn money for Thrift Stamps and receive together $8.75, how shall they divide the money if Halver works 20 hours and Bert 30 hours?

12. Louis invested $8.24 in War Saving Stamps and $7.00 for a bicycle. All he invested was two-thirds of what he had. How much had he?

GRADE VII

I. The seventh grade was studying percentage. The report of the whole school was utilized as a basis for these review problems. This report was not placed in the children's hands.

Grade	Amount	No. in Class	No. Investing in January
II..........	$110.00	21	14
III..........	111.25	20	19
IV..........	95.00	22	21
V..........	73.00	20	17
VI..........	223.50	24	22
VII........	60.50	34	20

TYPE OF PROBLEMS

1. There are 18 children in the third grade, 17 of whom invested their savings during January in Thrift Stamps. What per cent. invested their savings?

2. One hundred and seventeen children in the six grades invested in War Savings Stamps. There are 141 in the grades. What per cent. is invested in War Savings Stamps?

3. Eighty-five per cent. of the children in Grade V bought stamps, and 17 children bought stamps. How many children are in this grade?

4. The savings of the children in Sixth grade amounted to $223.60. Ninety-one per cent. of the children saved money by this method. What should they have saved if all the children had been represented?

5. Sixty-one per cent. of the children in the Seventh grade invested $60.50, while 91 per cent. of the Sixth grade invested $223.50. What grade had the higher per capita investment? How much better?

6. What was the average investment per pupil in the whole school? What per cent. was the per capita investment of Seventh grade of the per capita investment of whole school?

7. There are 34 pupils in our room; 14 failed to invest any money in stamps. What per cent. did invest? What per cent. failed to invest?

8. Which invested the larger per cent. of money in Thrift savings, the boys or the girls?

9. How much interest will $60.00 earn in five years at 4 per cent.?

10. What per cent. of interest does a $4.12 War Savings Stamp earn in 5 years? in 1 year?

II. Table showing value of War Savings Stamps:

Month	1918	1919	1920	1921	1922
January...	$4.12	$4.24	$4.36	$4.48	$4.60
February...	4.13	4.25	4.37	4.49	4.61
March.....	4.14	4.26	4.38	4.50	4.62
April......	4.15	4.27	4.39	4.51	4.63
May.......	4.16	4.28	4.40	4.52	4.64
June.......	4.17	4.29	4.41	4.53	4.65
July.......	4.18	4.30	4.42	4.54	4.66
August.....	4.19	4.31	4.43	4.55	4.67
September..	4.20	4.32	4.44	4.56	4.68
October....	4.21	4.33	4.45	4.57	4.69
November..	4.22	4.34	4.46	4.58	4.70
December..	4.23	4.35	4.47	4.59	4.71
January 1, 1923................................					$5.00

1. Find gain per cent.:

Bought	Sold	Gain Per Cent
February, 1918	August, 1919	....
May, 1919	October, 1921	....
October, 1918	December, 1920	....

2. Find amount due January 1, 1923, on a War Savings Stamp which was bought in January, 1918, compounded quarterly at 4 per cent. per annum. On one purchased in April, 1918.

3. Which is the better investment, to place $82.40 in a savings bank for 5 years at 4 per cent. compounded semi-annually or to buy a War Savings Stamp? How much better?

III. National indebtedness of leading warring countries, 1914, was as follows (taken from C. P. Austin's "Table of Indebtedness," *The Americas*, November, 1917):

	Indebtedness	Population	Per Capita Indebtedness
Central Allies			
Austria-Hungary.	$3,869,000,000	51,366,000	....
Germany........	5,029,000,000	65,000,000	....
Turkey.........	624,000,000	21,000,000	....
Entente Allies			
Belgium.........	829,000,000	7,400,000	....
France..........	6,346,000,000	40,000,000	....
Italy...........	2,921,000,000	35,000,000	....
United Kingdom.	3,486,000,000	45,000,000	....
United States....	1,028,000,000	100,000,000	....
Canada.........	483,000,000	7,200,000	....

Estimated cost of war to the United States June 30, 1917, to June 30, 1919, $36,000,000,000. (*Review of Reviews*, January, 1918.)

1. What is the total indebtedness of the Central Allies in 1914? of the Entente Allies? What per cent. is the debt of the Central Allies of that of the Entente Allies? Express this relation in another way. (For every dollar that the Entente Allies owed, the Central Allies owed $0.47 in 1914.)

2. The estimated cost of World's War for 4 years ending August, 1918, is $160,000,000,000. Compare this amount with the total indebtedness of the above nations in 1914. What per cent. is the indebtedness of 1914 of that of the estimated war debt of the World's War?

3. Find the interest on Great Britain's debt in 1914 at 4 per cent. per year, on Germany's? on that of the United States?

4. What is the compound interest for 1 year on $36,000,000,000, 4 per cent. compounded semi-annually? (Use an interest table.)

5. Will the War Savings Stamps issued by Congress in 1918 pay the interest on the above sum?

6. We loan our Allies $500,000,000 per month. What is this per year? What per cent. is this of the estimated cost ($18,000,000,000) of the war for the United States for this year?

IV. Following are the number of depositors in savings banks and amounts deposited in savings banks by the leading countries. (*World's Almanac*):

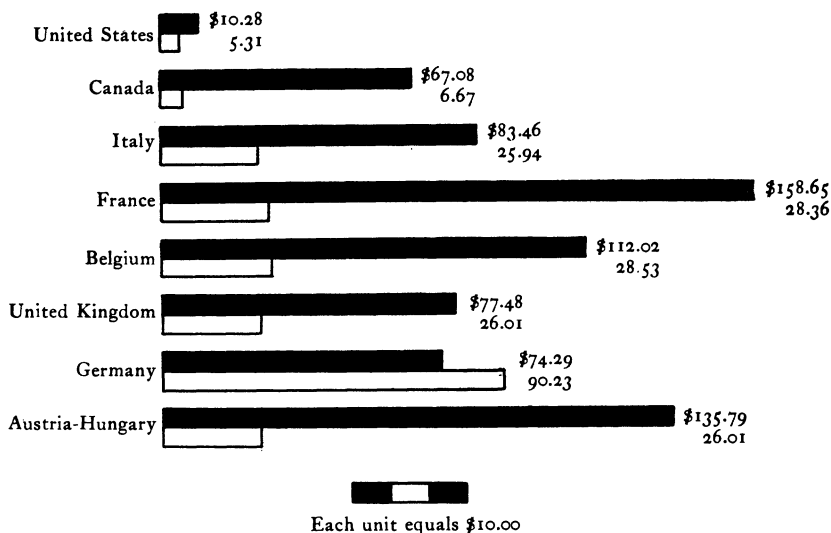|	No. of Depositors	Amount of Deposits	Population
Austria, 1913.........	6,807,000	$1,410,900,000	28,500,000
Belgium, 1912........	3,063,000	206,000,000	7,400,000
Denmark, 1915......	1,226,000	203,363,000	2,750,000
France, 1913, 1914...	15,160,000	1,123,263,000	40,000,000
Germany, 1913......	25,000,000	5,114,000,000	65,000,000
Hungary, 1913.......	900,000	46,139,000	20,800,000
Italy, 1915, 1917.....	8,946,000	923,386,000	35,000,000
Japanese Empire, 1916	23,900,000	209,564,000	73,300,000
United Kingdom, 1915	16,147,000	1,156,961,000	45,000,000
Canada, 1915, 1916...	205,500	44,000,000	7,200,000
United States, 1917...	11,367,000	5,318,021,000	100,000,000

V. Place the average for each depositor and each inhabitant in columns marked "Per Depositor" and "Per Capita":

	Per Depositor	Per Capita
Austria, 1913...........	....	....
Belgium, 1912..........	....	....
Denmark, 1915.........	....	....
France, 1913, 1914......	....	....
Germany, 1913.........	....	....
Hungary, 1913.........	....	....
Italy, 1915, 1917.......	....	....
Japanese Empire, 1916...	....	....
United Kingdom, 1915...	....	....
Canada, 1915, 1916......	....	....
United States, 1917......	....	....

1. Find from the following graph the countries whose per capita savings are less than 25 per cent. of their per capita debts; 50 per cent.

2. Our estimated expenditure for 1918 is 18 billion dollars. What will this be per capita? If 10 billions of this is raised by savings such as Liberty Loans, etc., what must our per capita savings be? What percentage of increase is this?

3. What per cent. is Germany's per capita savings of her war debt in 1914?

United States $10.28
              5.31

Canada $67.08
        6.67

Italy $83.46
       25.94

France $158.65
        28.36

Belgium $112.02
         28.53

United Kingdom $77.48
                26.01

Germany $74.29
         90.23

Austria-Hungary $135.79
                 26.01

Each unit equals $10.00

The black bars indicate the war indebtedness per capita.   The white bars
represent savings per capita

DIAGRAM 2

4. If the deposits of the United States were increased 20 per cent., how
much would that increase the savings per capita?

5. Additional war debt due to World's War (*Review of Reviews*, March,
1918):

	War Debt	Per Capita
Italy....................	$ 6,000,000,000	....
United States...........	12,000,000,000	....
Austria-Hungary	14,000,000,000	....
France.................	15,000,000,000	....
Russia.................	18,000,000,000	....
Germany...............	20,000,000,000	....
Great Britain...........	23,000,000,000	....

a. Find the per capita debt.

b. Make graph of this.

c. Great Britain's debt is now 33⅓ per cent. of her total wealth.   What
is her total wealth?

d. United States has a debt of 5 per cent. of her total wealth.   What is
her total wealth?

e. If each of the above countries saved 2 per cent. of their total wealth
what would their savings amount to?